

Claims

1. Device for a vehicle (1) intended for handling loads, such as an industrial truck, comprising a movable arm (4) connected to the vehicle, to which a tool (5) intended to carry a load (L) is connected, and an arrangement (7) to control movements of said tool,

characterized in that,

- the arm is pivotably mounted on the vehicle about a first substantially horizontal axis (8),
- the device comprises a member (9) for pivoting the arm relative to a chassis (2) of the vehicle,
- the tool (5) is displaceably arranged relative to the chassis (2) of the vehicle in the direction of the arm's (4) main longitudinal extension,
- the device comprises means (17) for displacing the tool,
- the control arrangement (7) is designed to co-ordinate the pivoting member's (9) pivoting of the arm and the displacement means' (17) displacement of the tool so as to achieve a movement of the load carried by the tool (5) along an optionally placed curve having an optional appearance in relation to the vehicle in the vertical plane.

2. Device according to claim 1, characterized in that, the tool (5) is pivotably arranged relative to the arm (4) about a second substantially horizontal axis (21), that the device comprises means (23) for pivoting the tool relative to the arm and that the control arrangement (7) is designed to control the pivoting means' (23) pivoting of the tool (5) for adjustment of the tool's orientation.

3. Device according to claim 2, characterized in that, the control arrangement (7) is designed to co-ordinate the pivoting means' (23) pivoting of the tool (5) with the pivoting member's (9) pivoting of the arm and with the displacement means' (17) displacement of the tool so as to achieve a desired ordered orientation of the tool during its movement.

4. Device according to claim 3, characterized in that, the control arrangement (7) is designed to co-ordinate said pivoting movements and displacements to maintain a substantially constant orientation of the load carried by the tool when moving the load.

5. Device according to any of the preceding claims, characterized in that, the arm includes at least two parts (14, 15, 16) that are displaceable in relation to each other along the arm's main longitudinal extension, whereby the tool is connected to a first (16) of the displaceable parts and a second (14) of the displaceable parts is connected to the vehicle's chassis (2), and that the displacement means (17) is arranged to displace the arm's first and second displaceable parts (16, 14) in relation to each other for displacement of the tool (5) relative to the vehicle's chassis (2).

6. Device according to claim 5, characterized in that, said displaceable arm parts (14, 15, 16) are telescopically received in each other and displaceable relative to each other.

7. Device according to any of the preceding claims, characterized in that, the displacement means (17) includes first hydraulic drive means.

8. Device according to claim 5, characterized in that, the first hydraulic drive means is a first hydraulic cylinder.

9. Device according to any of the preceding claims, characterized in that, the tool is connected to the arm via an arrangement (27) for replaceable attachment of tools to the arm (4).

10. Device according to any of the preceding claims, characterized in that, the tool (5) is a fork tool having two forks (22).

11. Device according to any of the preceding claims, characterized in that, the arm (4) is connected to the vehicle (1) on one longitudinal side of the vehicle in its normal driving direction.

5 12. Device according to claim 11, characterized in that, the tool (5) is connected to the arm (4) via an arrangement (27) for fixing tools in the vicinity of the arm's (4) free end that is distant from the vehicle's chassis (2), and that this arrangement comprises a member (24) connected to said end of the arm arranged to extend
10 towards the vehicle's centre seen in its normal driving direction to maintain a fixing point (29) for the tool at the fixing arrangement substantially centred relative to a horizontal longitudinal axis of the vehicle in said normal driving direction through the vehicle's centre of gravity.

15 13. Device according to any of the preceding claims, characterized in that, the pivoting means (9) include a second hydraulic drive means.

20 14. Device according to claim 13, characterized in that, the second hydraulic drive means is a second hydraulic cylinder, that is connected to the vehicles chassis and to the arm.

25 15. Device according to any of claims 2-14, characterized in that, the pivoting means (23) includes a third hydraulic drive means.

30 16. Device according to claim 15, characterized in that, the third hydraulic drive means is a third hydraulic cylinder.